

# ENGINEERING CHANGE NOTICE

<b>DART AEROSPACE LTD</b>		Amendment Design Review (ADR) Yes/No: <b>Y</b>		ECN #: <b>907</b>	
Date: 07.01.24		ADR Date: <b>07.01.22 07.09.02</b>			
Job No: 00075		Created By: <b>UP</b>		Checked By: <b>PH</b>	
Product No: D412-630		Approved By: <b>PH</b>		Approved By: <b>PH</b>	
Product Name: Heli-Access-Step		(Proj. Manager)		(Management if reqd)	

**Documents Affected:**

Release:	Supercede:
- D3560 Rev. B	- D3560 Rev.A
- D3562 Rev. B	- D3562 Rev.A
- D3592 Rev.A	

#	Engineering Actions	Yes	No	Responsible	To happen by:	Complete
1	Required Documents/Drawings Under Review?	X		CP	ASAP	UP 07.05.09
2	Update Blue/Pink Folder/Electronic File		X			
3	Update DSI Folder/Electronic File		X			
4	Update D-Part Master Binder	X		KJ	ASAP	07.05.09
5	Update Grey Project Binder	X		CP	ASAP	07.07.10
6	Update DEO/DSI Binder		X			
7	Update Master Document List (MDL)	X		CP	ASAP	UP 07.05.09
8	Update Document Record (DR)	X		CP	ASAP	UP 07.05.09
9	Update Change Record Form	X		CP	ASAP	UP 07.05.09
10	Move Electronic File	X		KJ	ASAP	07.05.09
11	Notify TC of Change		X			
12	Notify FAA of Change		X			
13	Update QSI 021 (TC/FAA STC)		X			
14	Update QSI 036 (K-Kits)		X			
15	Update Accpac Database	X		KJ	ASAP	07.05.09
16	Update Access Database	X		KJ	ASAP	07.05.09
17	Verification ARC		X			
18	Update STC Approval List		X			
19	Update Product Development Summary	X		CP/BSK	ASAP	07.05.09
20	Create/Update COSS (Estimate/BOM)	X		JLM/EC	ASAP	07.05.09
21	Create/Update PPP's	X		KJ	ASAP	07.05.09
22	Update Paperwork Kits in Production		X			
23	Update Paperwork Kits in Stock		X			
24	Red Tag Stock with old CHG #		X			
25	Rework/Scrap Current Production		X			
26	Rework/Scrap Kits in Stock?	X	X	LL	ASAP	07.06.08
27	Update Qpulse/Laminated Dwgs		X			
28	Create/Update Controlled PDF Files	X		KJ	ASAP	07.05.09
29	Create/Update FAI sheets	X		JLM/EC	ASAP	
30	Create/Update CNC Programs	X		JLM/EC	ASAP	
31	Create/Update Tooling	X		JLM/EC	ASAP	
32	MPP required?		X			
33	Notify Previous Customers		X			
34	Notify Eurocopter France		X			
35						
36						

**Description / Action:**

-D3562-041/-042 Step Weldment now a rivited design.

-D3560-1/-2/-3/-4 Arm, shape has changed

-D3560-041/-042/-043/-044 Arm Weldment, new parts made from welding D3560-1/-2/-3/-4 Arm with D3592-1 Plate. Need weld jig for attaching D3592-1 Plate at 2.4 degree angle

-D3592-1 Plate, new part. Will need special jig to bend plate into shape to match D2622

-D412-630-033/-034 kits are now at CHG # 002, pick lists for these kits are not affected


-Need to make qty(1) D3562-041 or -042 Step Weldment as prototype to verify design and tooling - **DONE OK 07.05.09**

**- Rework Any -033/-034 kits in stock w/ new D3562 weldment**

ECN Complete: **PH**

Date: **07.06.30**

**AMENDMENT DESIGN REVIEW (ADR)**Part/Installation No.: D412-630 Rev: \_\_\_\_\_ Design Review No.: \_\_\_\_\_ Date: 07.04.02Project Number: 00075 Project Description/Title: Heli-Access-Step  
(Folding Step)Eng. Project Manager: Chris Provencal

Persons Present	Title	Initial
	Design Manager	
Chris Provencal	Engineering Project Manager	
David Shepherd	Chief Engineer (DE #02)	
	Manufacturing Manager	
	Quality Manager	

**Comments**

-Customer complained about several cracked steps. Checking steps in stock found a brand new step with a cracked weld.

-Problem determined to be cracking of the weld during manufacture, step extrusion material is clearly warping from welding.

-D412-630-033/-034 steps were revised to address this problem

-determined that welding the D3560 Arms onto a thicker plate (0.125") instead of step should prevent cracking problem. This plate will then be rivited to the step extrusion

-Good fit is required between 0.125" plate and D3560 arm. Plate that is welded to D3560 Arms will have to be secured to prevent it from warping.

-sikaflex will be placed between the new arm weldment and the step extrusion to reduce stress levels

-welding jig required to ensure plate welded on at 2.4 degrees.

-(07.04.02) Testing of the step design indicated that the D3560-X Step Arms are not strong enough for the loading specified in SR-P577-1. At 990 lb, observed buckling on the side of the thru-pocket under compression. At 1188 lbs the side in tension snapped. Analysis was not done correctly, part was modeled as one section. Thru-pocketing prevented transfer of loads thru section. Should have considered 2 individual sections.

-(07.04.09) D3560-X redesigned with pocketing instead of thru-holes, similar to original step arm design.

-(07.04.24) Redesigned pocketed D3560-X withstood 1530 lb (ref attached pics) and is acceptable.

Key Tasks (Check or N/A)	Check	Responsible	Completion Date
Review Outstanding TSR/NCR/CAR/PAR	Y	CP	
Fill out Criteria/Constraints Form – Inputs	N	N/A	
Fill out Project Evaluation Form	N	N/A	
D-Part creation/revision	Y	CP	
Get Manufacturing Input	Y	CP	
First Article Inspection	Y	CP	
Fit and Function Test	Y	CP	
Structural Test	Y	CP	
Reports (Compliance, Loads, Stress, Conformity, DSI)	N	N/A	
Check Drawings against all QSIs	Y	CP	
Review Criteria/Constraints Form	N	N/A	
Revision to existing approval	N	N/A	
Close Amendment Project	Y	CP	

**Conclusion:**

Procede with design change, ref ECN #907

# ENGINEERING CHANGE NOTICE

MPP

<b>DART AEROSPACE LTD</b>		Amendment Design Review (ADR) Yes/No: <input checked="" type="checkbox"/> Y	ECN #: <b>907</b>
Date: 07.01.24	ADR Date: 07.01.22 07.05.09		
Job No: 00075	Created By: <i>CP</i>	Checked By:	
Product No: D412-630	Approved By:	Approved By:	
Product Name: Heli-Access-Step	(Proj. Manager)	(Management if reqd)	

## Documents Affected:

Release: Supercede:  
 - D3560 Rev. B - D3560 Rev.A  
 - D3562 Rev. B - D3562 Rev.A  
 - D3592 Rev.A

#	Engineering Actions	Yes	No	Responsible	To happen by:	Complete
1	Required Documents/Drawings Under Review?	X		CP		<i>CP 07.05.09</i>
2	Update Blue/Pink Folder/Electronic File		X			
3	Update DSI Folder/Electronic File		X			
4	Update D-Part Master Binder	X		KJ		<i>07.05.09</i>
5	Update Grey Project Binder	X		CP		
6	Update DEO/DSI Binder		X			
7	Update Master Document List (MDL)	X		CP		<i>CP 07.05.09</i>
8	Update Document Record (DR)	X		CP		<i>CP 07.05.09</i>
9	Update Change Record Form	X		CP		<i>CP 07.05.09</i>
10	Move Electronic File	X		KJ		<i>07.05.09</i>
11	Notify TC of Change		X			
12	Notify FAA of Change		X			
13	Update QSI 021 (TC/FAA STC)		X			
14	Update QSI 036 (K-Kits)		X			
15	Update Accpac Database	X		KJ		<i>07.05.09</i>
16	Update Access Database	X		<del>KJ</del>		<i>07.05.09</i>
17	Verification ARC		X			
18	Update STC Approval List		X			
19	Update Product Development Summary	X		CP/SSN		
20	Create/Update COSS (Estimate/BOM)	X		JLM/EC	<input checked="" type="checkbox"/>	
21	Create/Update PPP's	X		KJ		<i>07.05.09</i>
22	Update Paperwork Kits in Production		X			
23	Update Paperwork Kits in Stock		X			
24	Red Tag Stock with old CHG #		X			
25	Rework/Scrap Current Production		X			
26	Rework/Scrap Kits in Stock?	X	X	<del>EC</del>		<i>07.05.09</i>
27	Update Qpulse/Laminated Dwgs		X			
28	Create/Update Controlled PDF Files	X		KJ		<i>07.05.09</i>
29	Create/Update FAI sheets	X		JLM/EC		
30	Create/Update CNC Programs	X		JLM/EC		
31	Create/Update Tooling	X		JLM/EC		
32	MPP required?		X			
33	Notify Previous Customers		X			
34	Notify Eurocopter France		X			
35						
36						

## Description / Action:

-D3562-041/-042 Step Weldment now a riveted design.  
 -D3560-1/-2/-3/-4 Arm, shape has changed  
 -D3560-041/-042/-043/-044 Arm Weldment, new parts made from welding D3560-1/-2/-3/-4 Arm with D3592-1 Plate. Need weld jig for attaching D3592-1 Plate at 2.4 degree angle  
 -D3592-1 Plate, new part. Will need special jig to bend plate into shape to match D2622  
 -D412-630-033/-034 kits are now at CHG # 002, pick lists for these kits are not affected  
 -Need to make qty(1) D3562-041 or -042 Step Weldment as prototype to verify design and tooling - *DONE OK*

*Rework ANY -033/-034 KITS IN STOCK w/ NEW D3562 WELDMENT*

ECN Complete: \_\_\_\_\_

Date: *07.05.09*